The *Bulletin* is sent out to all botanic and agricultural departments in correspondence with Kew, and much of its contents is usually reprinted in local journals. It affords the best evidence of the many activities of the Royal Gardens, in advising upon the possible development of the natural resources of our Colonies and Dependencies. Almost every issue contains a number of plain statements of attempts made to introduce new and commercially profitable plants in suitable districts, of improved methods of cultivation, and of work that men trained at Kew are doing in the various parts of the world to which they have gone from the Royal Gardens. By suspending the publication of the *Bulletin*, the link connecting Kew with the whole of the botanic stations of the Empire is broken, and the means of communicating information to them all is removed at a time when the information afforded is no less valuable than in pre-war periods.

Without knowledge of the functions fulfilled by the *Bulletin*, and an intimate acquaintance with what it has accomplished in providing information not accessible in any other form in regard to the capabilities of the various parts of the Empire for the cultivation of plants of economic importance, no Government official is capable of deciding justly whether the *Bulletin* is an essential publication or not. The British Science Guild urges, therefore, in the interests of Imperial development, that the decision be submitted to a competent tribunal, which will take into consideration, not only the shortage of paper, but also the value of what is printed upon it. It is confident that the result of such an inquiry would be a judgment in favour of the continued publication of the *Bulletin*.

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PROF. KR. BIRKELAND.

WE regret to learn from the *Morning Post* that Prof. Kr. Birkeland, of Christiania, died in Tokyo on June 18. He was one of the few speculative physicists of the day the value of whose work would be generally admitted in commercial circles. He was the co-inventor with Mr. Sam Eyde of the Birkeland-Eyde direct process for the manufacture of calcium nitrate by the extraction of nitrogen from the atmosphere. In the Journal of the Royal Society of Arts, May, 1912, Mr. E. Kilburn Scott records how, starting with a 25-h.p. experimental plant in 1903, the company controlling the Birkeland-Eyde patents had 200,000 h.p. at work in 1912, and was likely to add a further 300,000 h.p. before the end of 1916. This was by no means the only successful patent in which Prof. Birkeland was interested.

As a theorist Prof. Birkeland was extraordinarily bold in his speculations. He had theories on the internal constitution of the sun and the nature of sunspots, on the sun as a magnet and as a source of electricity, on the origin of the planets and their satellites, on the nature of various celestial phenomena, especially the zodiacal light, on the production of aurora and magnetic storms, and on the past geological history of the earth. The wealth acquired by his practical gifts enabled Prof. Birkeland to experiment and arrange for solar and magnetic observations on a large scale. He made many striking experiments with an artificially magnetised terella in a high vacuum, directing towards it electrical discharges, intended to represent the discharge of corpuscles from the sun. In some of his experiments the vacuum chamber had a capacity of 70 litres, and the supply of electrical energy required a 6-h.p. engine. He obtained phenomena closely resembling various forms of aurora, which he believed to represent the conditions under which magnetic storms appear on the earth.

Prof. Birkeland was largely responsible for the institution of special magnetic observatories in Arctic regions in 1900, in 1902-3, and again during the last few years. His two large volumes in English, "The Norwegian Aurora Polaris Expedition, 1902-3," besides much speculation as to the causes of magnetic storms, contain much important information as to the simultaneous progress of magnetic disturbance at different parts of the earth. Since 1910 he had lived a good deal abroad for observational purposes, and numerous communications to the *Comptes rendus* of the French Academy of Sciences describe his various conclusions and speculations. In one dated July, 1914, he expressed his intention of devoting the next three years to the study of the zodiacal light in Natal, at Helwan, and in Uganda, and he was working in Egypt in 1915 and 1916. Presumably the continuation of his quest had taken him to the Far East. At the time of his death Prof. Birkeland was only about fifty years of age; but when last in England, in 1913, he had aged considerably in appearance and become very deaf. He was, however, as animated as ever when discussing his theories.

C. CHREE.

NOTES.

ON June 20 Lord Montagu of Beaulieu gave an interesting lecture before the Aeronautical Society of Great Britain on the world's air routes and their regulation. He pointed out how favourably placed the British Empire was in this matter, inasmuch as its many possessions were so scattered about the globe that suitable landing and halting places could be provided without the necessity of asking for concessions from other nations. Lord Montagu based his calculations upon an assumed speed of 120 miles an hour,